Cronotermostato

Digitale a radiofrequenza

Mithos RF

Manuale d'Uso

User Manual
RADIOFREQUENCY
DIGITAL PROGRAMMABLE THERMOSTAT

CE

vemer SPA

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Mithos Digital Programmable thermostat

English

- **Comfort and control of consumptions are ensured both in winter and in summer (heating/air conditioning)**

- **Power supply: 1x1.5 V battery (AA type) alkaline**

- **Interchangeable silver colored front panel available as accessory (code VE323200)**

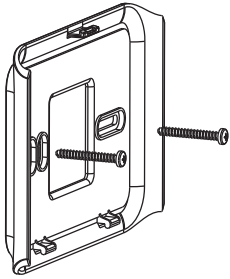
- **Installation can be wall or box 503 coverage (3 modules)**

- **Display of the operation status, time, day and internal temperature**

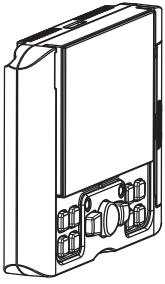
- **Weekly programming with three temperature values controllable during the day**

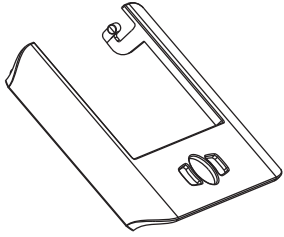
T3 : +2 ÷ +35 °C
T2 : +2 ÷ +35 °C
T1 : +2 ÷ +35 °C

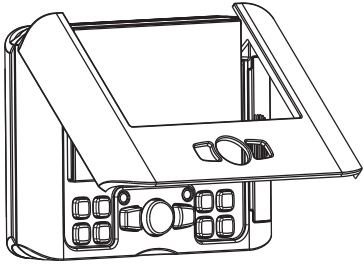
ASSEMBLY



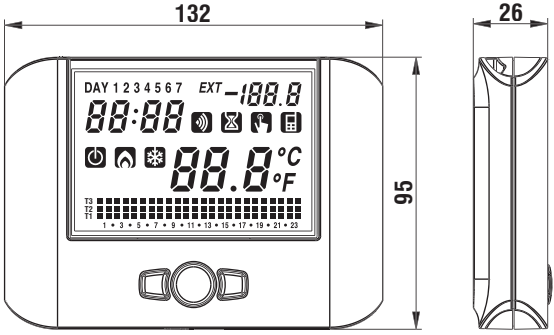
- It is advisable to place the programmable thermostat in an area that mirrors, as much as possible, the conditions of average temperature of the entire environment. Avoid installing too close to doors, windows, heat sources, direct sunlight radiation, and positions with excess or total lack of air inlet. It is moreover advised to install the environment programmable thermostat at about 150 cm from the floor.
  Assembly can be wall or box 503 coverage





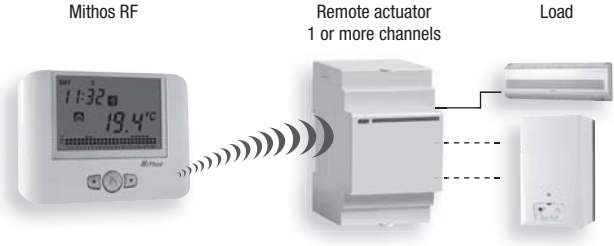


DIMENSIONS



FUNCTIONS

The remote actuator activates the load after a radiofrequency signal sent by the programmable thermostat Mithos RF.



For details about the configuration of the devices, see the section CONFIGURATION AND REMOTE ACTUATOR TEST

■ **Mithos RF** is an electronic wall-mounting weekly programmable thermostat for load control via radio frequency signal. It is suitable for environments with a pollution degree of 2.

Code	Model	Description
VE428900	Set Mithos RF Bianco	Mithos RF white + remote actuator 1 channel
VE426300	Set Mithos RF Nero	Mithos RF black + remote actuator 1 channel
VE427100	Mithos RF Bianco	Digital programmable thermostat RF control white
VE425500	Mithos RF Nero	Digital programmable thermostat RF control black

SAFETY WARNINGS

■ **During installation and operation of the product, it is necessary to comply with the following instructions:**

1) **The instrument must be installed by a skilled person, in strict compliance with the connection diagrams.**
2) **Do not power on the instrument if any part of it is damaged.**
3) **The instrument must be installed and activated in compliance with current electric systems standards.**

TECHNICAL CHARACTERISTICS

- Power supply: 1x1.5V AA stilo alkaline battery
- Battery life: about 24 months
- Charge reserve: 1 minute (for battery replacement)
- Battery charge level indication
- 5 temperature settings:
  - **T3**, **T2**, **T1** for automatic regulation
  - **T0** antifreeze temperature setting in advanced programming
  - **T** temperature in manual operation
- Temperature regulation:
  - ON/OFF with differential setting between 0.1°C and 1°C
  - PROPORTIONAL with proportional band and regulation period setting
- Weekly programming
- Daily resolution: 1h
- Activation delay setting between 15, 30 and 45 minutes (independent for every hour)

- Measured temperature scale: 0°C ÷ +50°C
- Measured and displayed temperature resolution: 0.1°C
- Temperature regulation range: 2.0°C ÷ +35°C
- Measurement update: every 20 seconds
- Measurement precision: ± 0.5°C
- Winter or summer or manual operation
- Optional display in °F
- Automatic change CET / DST
- Password protected keypad lock for installation in public places
- Wall mounting (or on 503 type box)
- Radio Frequency remote actuator control
- Operating temperature: 0 °C ÷ +50 °C
- Operating humidity: 20% ÷ 90% noncondensing
- Storage temperature -10°C ÷ +65°C
- Degree of protection: XXD

The preset temperature values (expressed in °C) are the following:

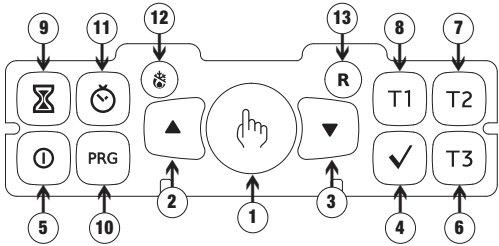
	funct. winter	funct. summer
T1	5.0	**OFF**
T2	15.0	23.0
T3	18.0	25.0
TMANUAL	20.0	24.0

Regulation of temperature levels is subjected to the following condition: T1 ≤ T2 ≤T3.
In summer mode, T1 cannot be set and corresponds to the air conditioning OFF.

■ REMOTE ACTUATOR

- For details about technical specifications refer to the remote actuator documentation supplied with the instrument.

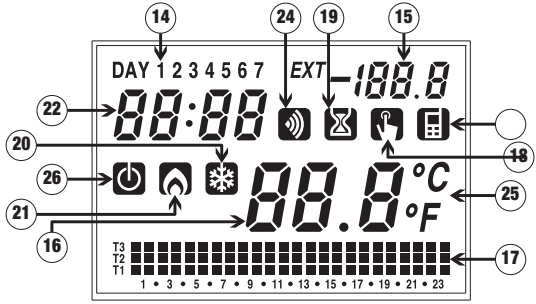
CONTROL ELEMENTS / DISPLAY INDICATIONS



■ *Control elements*

1) **" " Key**: manual operation
2) **" ▲ " Key**: increases the selected field or displays the daily maximum temperature
3) **" ▼ " Key**: decreases the selected field or displays the daily minimum temperature
4) **" ✓ " Key**: confirms the set data
5) **" ⏻ " Key**: activation and deactivation of the programmable thermostat
6) **" T3 " Key**: selects temperature **T3**
7) **" T2 " Key**: selects temperature **T2**
8) **" T1 " Key**: selects temperature **T1**
9) **" ⧖ " Key:** allows to set a timer or an activation delay
10) **" PRG " Key**: programs setting or advanced programming
11) **" ⏲ " Key**: clock setting
12) **" ❄ " Key**: winter operation (preset) or summer operation (the button is reachable only with a point)
13) **" R " Key**: deletes date and time but not the set programs (to do this see "Restoring default parameters" page 56) (the key is reachable only with a point).

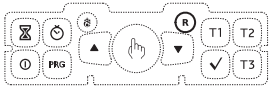
■ *Display indications*

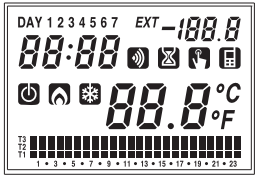


14) "Day" Field
15) "Programming mode" Field
16) "Environment temperature" Field
17) "Set program" Field
18) "Manual operation activation" Field
19) "Timer" Field
20) "Air conditioning activation" Field
21) "Heating activation" Field
22) "Clock" Field
23) Not used Field
24) "Radio frequency transmission" Field
25) "Unit of measurement" Field
26) "Off" Field

INITIAL START-UP / RESET

- Insert the battery and press the **"R"** key using a point.
  All the display segments will turn on and the relay will be activated for 3 seconds; after this, the clock field **(22)** will start at 12:00 and will flash until the clock is set.



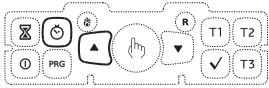


Attention

if the clock is not set, the programmable thermostat will not adjust; it will start doing so only once the clock is set.

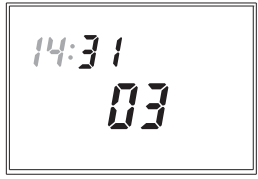
CLOCK SETTING

- Press the **"⏲"** key; on field **(16)** seconds will run flashing, while field **(22)** will display digits for minutes and hours.
  Press the **"▲"** key to reset seconds and increase the minute field by 1 or **"▼"** to reset the seconds field.
  Press the **"✓"** key to confirm.
  (In case the setting of the clock takes place after a reset, the "seconds" field is not adjustable. Therefore, the first parameter to set will be the "minutes" field).



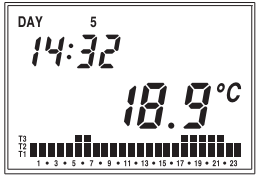
English

At this point, the minutes digit will start flashing.
Use the **"▲"** and **"▼"** keys to increase or decrease the field and press **"√"** to confirm.
Repeat the procedure to set the hours.



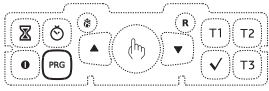
Once the value for the hours is set, field **(22)** will display a flashing value of the year, field **(15)** the value of the month and field **(16)** the value of the day.

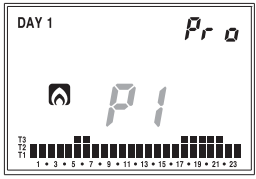
Press the **"▲"** and **"▼"** keys to modify the values and **"√"** to confirm.
Once the day is set, press the **"⏲"** key to exit the menu.
Upon exiting such procedure the clock indication will not flash any more; field **(16)** will display the environment temperature again.



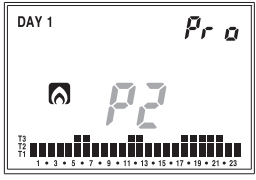
PROGRAMS SETTING

- Pressing the **"PRG"** key on field **(14)** will display the indication regarding Monday, field **(16)** will display the selected program flashing (in the example: P1), field **(15)** will display **"Pro"**, field **(17)** will display the graphic trend of the corresponding program and will activate symbol **(20)** or **(21)** depending on the set operation (summer or winter).
  If the selected program is correct, press the **"✓"** key to continue to the next day.

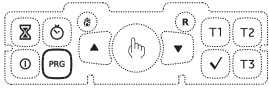


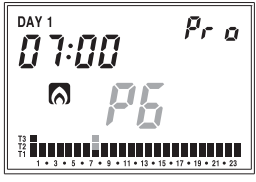


- If the selected program is not correct for that day, you can create another one using the **"▲"** and **"▼"** keys which modify value **"Px"** contained in field **(16)**; as the program changes, so does the content of field **(17)** regarding the selected program. The default programs are listed at the end of this manual.
  Once the correct program is selected, press the **"✓"** key to move on to the next day.

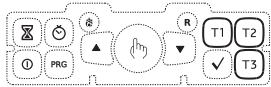


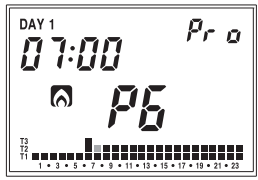
- If no program satisfies the user's needs, choose any program and press the **"PRG"** key again; this will bring the segment of the corresponding field **(17)** to flash.



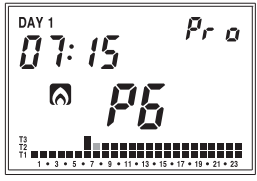


With the **T1**, **T2** and **T3** keys, it is possible to modify the temperature selected for that hour and, at the same time, move on to the next one. Using the **"▲"** and **"▼"** keys, it is possible to move from one hour to the next without modifying the set temperature.

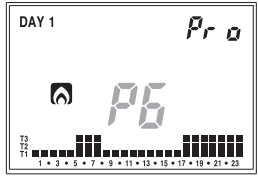




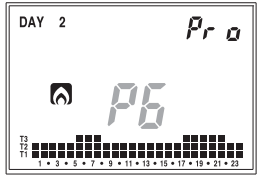
Pressing the **"⧖"** key, it is possible to set the activation delay for that specific hour. Each pressure of the **"⧖"** key increases the delay by 15 minutes.



Pressing the **"✓"** key confirms the modified program and returns to the situation with **"Px"** flashing on field **(16)**.

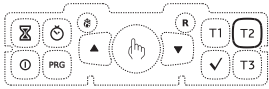


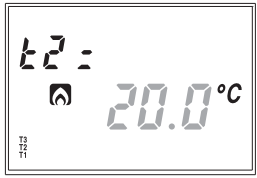
Pressing the **"✓"** key confirms the program for that day and moves on to the next until Sunday appears, after which operation goes back to normal mode.



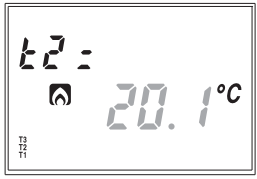
TEMPERATURES SETTING

- In any of the operation modes, pressing the **T1**, **T2** and **T3** keys will bring field **(22)** to display the writing corresponding to the temperature that is being modified; on field **(16)** the value of the aforementioned temperature will flash.

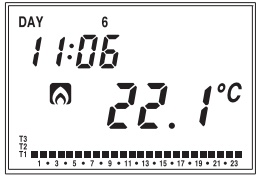




With the **"▲"** and **"▼"** keys, it is possible to modify the value and with the **"✓"** key it is possible to confirm the change and return to normal operation.



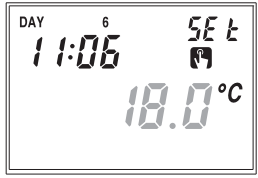
The setting limits are reported in the technical characteristics.



English

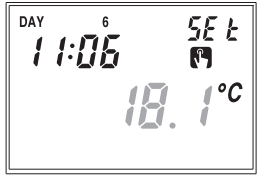
- During automatic operation, when pressing the **" ☝ "** key, the system will act as a normal thermostat with operating temperature Tm.

Field **(22)** will show the current time.
Field **(14)** will show the current date.
Field **(15)** will display the writing **"SEt"**.
The symbol **(18)** will appear.

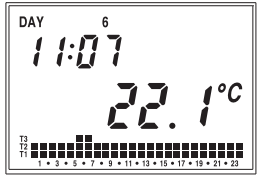


Field **(17)** will disappear. On field **(16)** the set manual temperature value will flash. With the **"▲"** and **"▼"** keys, it is possible to change the value from 2.0°C to 35°C.

Pressing the **"✓"** key or after 45 seconds from the last operation, field **(16)** will display the value of the environment temperature).

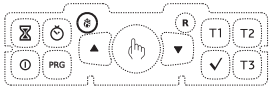


At any time, it is possible to verify the set temperature pressing the **"▲"** key or the **"▼"** key; pressing one of the 2 keys again will allow modification of the temperature setting. To move from the manual program to the automatic one, simply press the **" ☝ "** key again for at least 3 seconds.



SUMMER / WINTER OPERATION

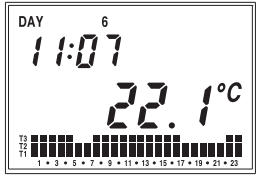
To move from winter to summer operation (or vice versa), press the **"❄"** key with a point **(12)**.



On field **(22)** the writing **"rISC"** (or **"Cond"**) will flash and the symbol **"🔥"** (or **"❄"**) will appear.

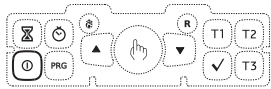
With the **"▲"** and **"▼"** keys, it is possible to select one of the two operations.

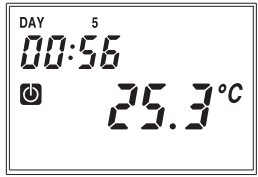
The program will go to the desired operation pressing the **"✓"** key or after 45 seconds from the last operation. The potential of the summer operation is the same as the one of the winter operation; therefore the setting of all parameters can be carried out following the procedures reported in this instructions manual.



English

KEYPAD ON-OFF COMMAND





- To deactivate the programmable thermostat press the "⏻" key. The display will show the "⏻" symbol. Once deactivated, during winter operation the programmable thermostat will activate the antifreeze function to ensure that the temperature does not decrease below a certain threshold. Such temperature value is set in advanced programming (see "Antifreeze temperature" page 50)

  During summer operation, instead, the deactivated system condition completely excludes the refrigeration command.
  To go back to the operating mode prior to the deactivation, press the "⏻" key again.

TIMING

The programmable thermostat allows to activate three different timed operation modes, useful when you want to maintain a certain condition for some hours/days. The three timed operations are:

Manual operation

If in manual status you set a timing, such manual status will be maintained until the end of the timing; operation will then switch to automatic. If, during the timing, operation is switched to automatic or off, the timing ends.

Automatic operation

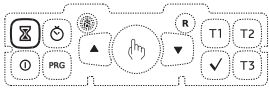
If in automatic status you set a timing, such automatic status will be maintained until the end of the timing; operation will then switch to automatic. If, during the timing, operation is switched to manual or off, the timing ends.

Timed deactivation

If in off status you set a timing, such off status will be maintained until the end of the timing; operation will then switch to the one active before deactivation. If, during timing, the system is activated, the timing ends.

In all cases, the timing condition is signalled by the symbol **" ⧗ "**.

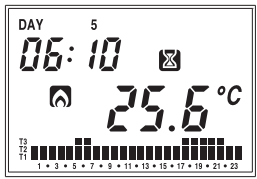
Setting a timing



To activate timing it is necessary to press the **"⧗"** key

The writing **"00h"** will flash, indicating the timing. With the **"▲"** and **"▼"** keys it is possible to choose a value between 0 and 99. Pressing the **"🕒"** key will allow to choose the measurement unit between hours and days.

Each change in measurement unit implies a resetting of the set timing value.
Once the value has been set, press **"✓"** to confirm or wait 45 seconds.



Note. In case time is modified during timing, it will not be updated.

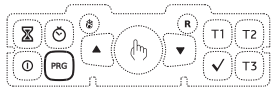
Note. In the hour count, the hour in which programming is carried out is included. In the same way, if the measurement unit is in days, the count also includes the current one. Timing in hours terminate on the hour, the ones in days at midnight.

ADVANCED PROGRAMMING

- In advanced programming it is possible to access the following operation parameters:

  - regulation type
  - parameters for regulation type
  - antifreeze temperature
  - temperature measurement unit
  - Setting/Test of the remote activator
  - keypad lock password
  - system operation hours
  - battery charge status

- To enter advanced programming, press the **"PRG"** key for more than 3 seconds. The parameter to be modified will flash; using **"▲"** and **"▼"** it is possible to modify its value. Use **"✓"** to confirm the setting and move on to the next parameter. Once the last parameter has been confirmed, you will exit the menu and the programmable thermostat will restore operation with the previously set operation.



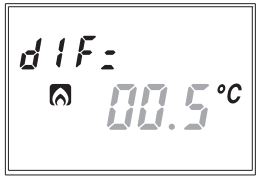
Regulation type (only for winter operation)

- Field **(22)** will display the writing **"rEG="** and on field **(16)** letter **"0"** (ON-OFF programming) or **"P"** (proportional programming) will flash.

- Using the **"▲"** and **"▼"** keys, choose the desired regulation mode and press **"✓"** to confirm and move to the setting of the next parameter.

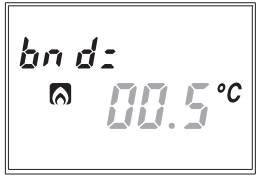
Parameters for the chosen regulation type (only for winter operation)

- In case of **"ON/OFF"** regulation type, the only parameter to be set is the differential. Field **(22)** will display the writing **"dIF="** and on field **(16)** the value currently set will flash. Press the **"▲"** and **"▼"** keys to increase or decrease the value. The range varies from 0.1°C to 1°C.

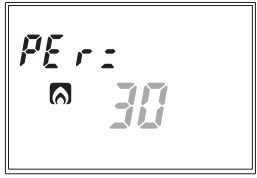


- In case of **PROPORTIONAL** regulation type, the parameters to be set are:
  - regulation band
  - regulation period

  Field **(22)** will display the writing **"bnd="** and on field **(16)** the value currently set will flash. Press the **"▲"** and **"▼"** keys to increase or decrease the value. The range varies from 0.5°C to 5°C.



  Once the band value is confirmed, field **(22)** will display the writing **"PEr="** and on field **(16)** the value currently set will flash. Press the **"▲"** and **"▼"** keys to increase or decrease the value. It is possible to choose between 10, 20 or 30 minutes.

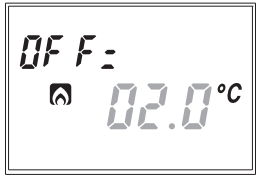


For a wider description on how to operate the regulation type choice, please refer to the chapter "REGULATION TYPE" on page 56.

Antifreeze temperature (only for winter operation)

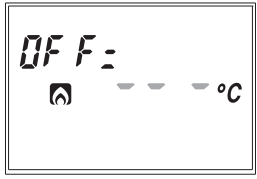
- It is possible to set a safety temperature value (antifreeze temperature) to be maintained in case the programmable thermostat is deactivated.

Field **(22)** will display the writing **"OFF="** and on field **(16)** the antifreeze temperature value currently set will flash.



Press the **"▲"** and **"▼"** keys to increase or decrease the temperature value. It is possible to choose a value between 01.0°C and 10.0°C.

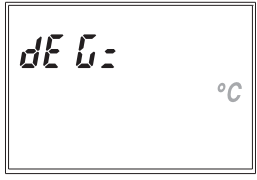
It is also possible to disable the antifreeze function holding the **"▼"** key until field **(16)** displays the symbol **"---"**. In this case, when the programmable thermostat is off, no regulation is executed.



Temperature measurement unit

It is possible to choose to display the temperature in degrees Celsius (°C) or Fahrenheit (°F).

Field **(22)** displays the writing **"dEG="** and on field **(25)** the measurement unit currently set will flash.



Press the **"▲"** or **"▼"** keys indifferently to change the unit and **"✓"** to confirm.

SETTING/TEST OF REMOTE ACTUATOR

The remote actuator activates the load after a radio frequency signal sent by the programmable thermostat Mithos RF.

Operation

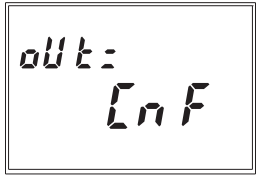
- For details about the functional characteristics of the remore actuator, refer to the documentation supplied with the instrument.

Channel setting

- Activate setting mode ad described in the documentation of the remote actuator.
- When the setting mode is active the actuator must receive a configuration string.
- After string reception the channel is set and the actuator starts the normal operation.
- For re-setting the channel, repeat this procedure. Every new setting resets the previous one.

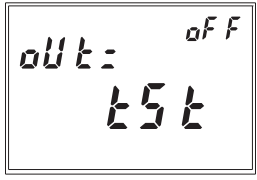
Mithos RF setting

- The field **(22)** displays **"oUt="**; the field **(16)** displays **"CnF"** flashing.
- Verify that the remote actuator is in setting mode.
- Press the **"PRG"** key for almost 3 seconds. When the setting is completed, on the field **"24"** the symbol **"))) "** appears and then the page of radio communication test is displayed.



TEST COMMUNICATION

- During the test, field **(22)** displays **"oUt="**, field **(16)** displays **"tSt**" flashing and field **(15)** displays **"ON"** or **"OFF"** to indicate if the test is activated or not.
- To activate the test press for some seconds the key **"PRG"**.
- If the modality-test is actived, the display shows **" ⌂ "** when the relay is in position ON, while the absence of this symbols indicates that the relay is OFF. The switching



ON/OFF commands are alternatively sent every 10 seconds for 10 minutes.

- To exit the modality test press the key " ✓ ".

Note. It is possible to switch from test mode to set mode using keys " ▲ " and " ▼ ".

Keypad lock password

It is possible to choose a three digit value to be used to unlock the keypad.

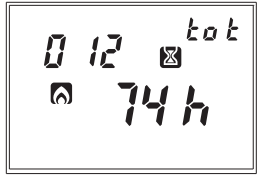
Field **(22)** will display the writing **"PAS="** and on field **(16)** the password value currently set will flash (the default set value is **"123"**). Using the **"▲"** and **"▼"** keys, choose a desired value and press **"✓"** to confirm.

To enable/disable the keypad lock, please refer to the chapter "ADVANCED FUNCTIONS".

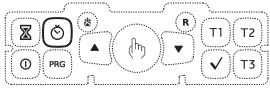
System operation hours

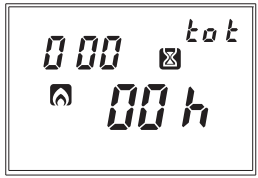
It is possible to display the system operation hours (relay in ON status).

Field **(15)** displays the writing **"tot="** while fields **(22)** and **(16)** will display the timing value (such value is of 5 digits, 3 on field **(22)** and 2 on field **(16)** and it is to be read from left to right. In the example the value is of 1274 hours).



Two independent totalizers for winter and summer operation are present. The maximum memorizable value is of 65535 hours. To reset the counter, press the **"⏲"** key for about 3 seconds when you are in the counter view menu.

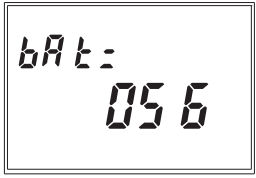




Battery charge status

It is possible to view the battery charge status.

Field **(22)** will display the writing **"bAt="** and field **(16)** will show the percentage value of the charge level.

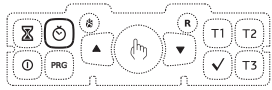


Since this is the last parameter of the sequence, pressing the **"✓"** key will exit the menu and return to automatic operation.
If no key is pressed during setting of these parameters, automatic operation will be restored after 45 seconds.

ADVANCED FUNCTIONS

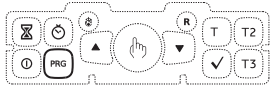
Automatic change CET / DST

The programmable thermostat allows to automatically move from the CET (Central European Time) to DST (Daylight Saving Time) and vice versa.
Holding the **"🕒"** key for at least 3 seconds, the display will show the writing **"Change"** and field **(15)** will flash the writing **"On"** or **"OFF"**.
Choose using the **"▲"** or **"▼"** keys and confirm with **"✓"**.
If the choice is OFF, you will exit the menu and the programmable thermostat will not execute the hour change. If the choice is ON, then two other menus will be displayed, which define respectively the hour change from



- winter → summer
- summer → winter (on field **(20)** the **"❄"** symbol will appear)

To modify the set values, press the **"PRG"** key. The parameter corresponding to the modification will start flashing.
Press the **"▲"** and **"▼"** keys to modify the values and **"✓"** to confirm.



The settings for both menus are, in order:

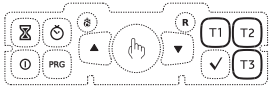
- week of the month
  (**1ST** first, **2ND** second, **3RD** third, **4TH** fourth, **LST** last)
- day of the week
- month
- changing hour

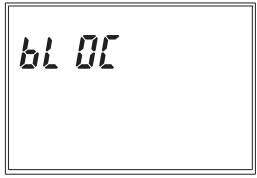
At the end of each menu, press the **"✓"** key again to access the next menu or to exit and return to the normal view.
The default values set for the automatic time change are:

- winter → summer change: last Sunday of March at 02:00
- summer → winter change: last Sunday of October at 03:00

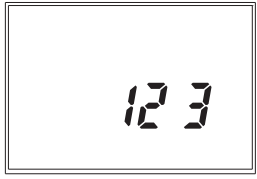
Keypad lock

In case you want to install the programmable thermostat in public environments, it is possible to lock the keypad simply by simultaneously holding the **T1**, **T2** and **T3** keys for 3 seconds. The display will show the writing **"BLOC"**.



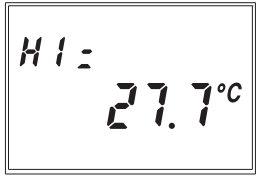


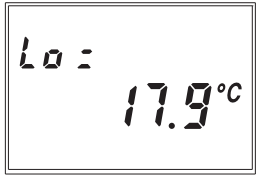
To unlock the keypad, press the **T1**, **T2** and **T3** keys again for 3 seconds and input, using the **"▲"** and **"▼"** keys, the protection password.



Display of max/min daily temperature

The programmable thermostat memorizes the minimum and maximum temperature values measured during the day.
To view such values press the **"▲"** key (maximum value) or **"▼"** (minimum value). Field **(16)** will display the value measured.
To reset the minimum/maximum value memorized, press the **"▲"**/**"▼"** key for at least 3 seconds.





English

Emergency regulation

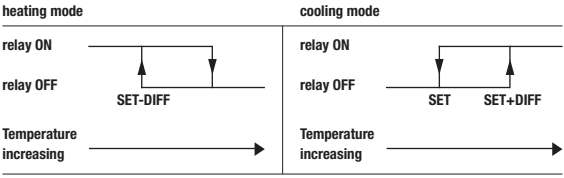
During winter operation, in case of sensor failure, in order to avoid problems regarding freezing, the programmable thermostat activates the relay for 10 minutes every 4 hours and field **(16)** will display the **"---"** symbol.

Restoring default parameters

Simply pressing the **"R"** key will not cause a total reset of the instrument. To do so and allow the loading of the default values, it is necessary to press the **"R"** key and then, within 3 seconds, the **"✓"** key. The display will show the writing **"dEF"**.

REGULATION TYPE

The default regulation type is ON/OFF with deactivation in correspondence with the setpoint and with differential set to 0.3°C.
During on/off operation mode, the relay of remote actuator follows the following logic:



During heating mode the proportional regulation can be chosen; in certain types of systems, this allows to improve the regulation, in order to obtain a constant temperature.
This regulation activates the ON or OFF relay within a predefined regulation cycle on the basis of the gap of the temperature measured by the setpoint value.
The necessary parameters for the definition of this mode are:

- the regulation band
- the regulation period

The regulation band represents the temperature interval, centered on the setpoint, in which the proportional regulation is checked.

Half the desired regulation band is set in the device.
The range for this parameter is 0.5 ÷ 5.0°C with 0.1°C resolution

The regulation period represents the duration of the regulation cycle (activation period + deactivation period)
The value of this parameter is selectable between 10', 20' and 30'

Choose the regulation period value as follows:

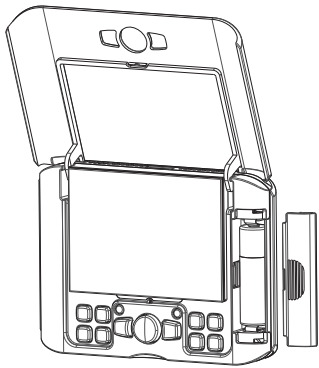
- 10' for low thermal inertia systems
- 20' for medium thermal inertia systems
- 30' for high thermal inertia systems

Choose the regulation band value as follows:

- broad band (5°C) for systems with high thermal gradient
- narrow band (0.5°C) for systems with low thermal gradient

BATTERY REPLACEMENT

- When the battery is almost flat, the whole display flashes, although it will continue to carry out all functions.
  For lower battery voltage, the instrument will reach the flat battery status, which causes the display to switch off, a reduced consumption and the suspension of all functions except the clock. Operation in this status may continue until the battery keeps a voltage such to allow operation to the microcontroller.



The replacement of batteries must take place within maximum time of one minute in conditions of flashing display.
Beyond this time, date and time will be lost and must be reset upon next activation.
However, the executed programs will remain memorized.
The use of strictly alkaline batteries is recommended.

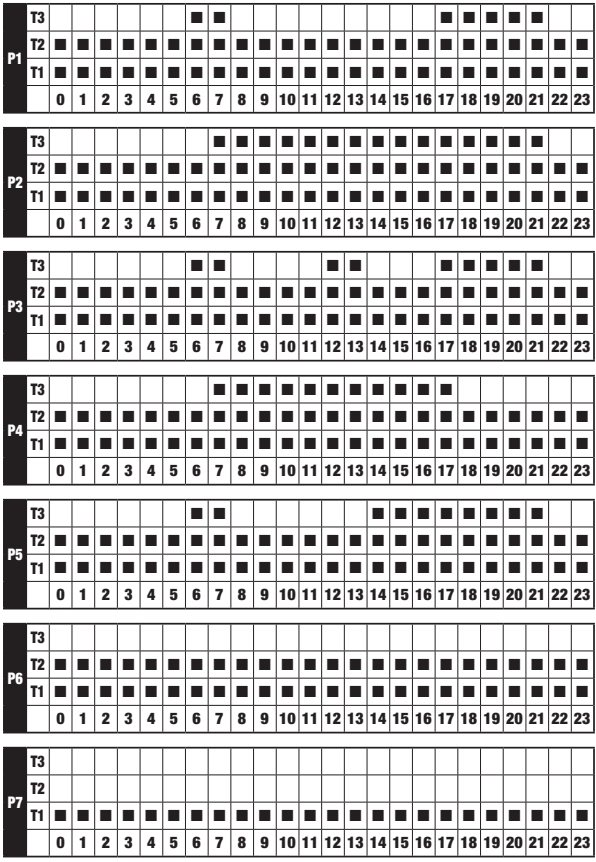
Attention

when the battery is reinserted, the programmable thermostat does not restart operation immediately; a period of time varying between 5 and 10 seconds must be waited, during which the internal voltage regains normal operation values. If the flat or nearly flat battery is removed and put back again, the waiting time could be much longer.

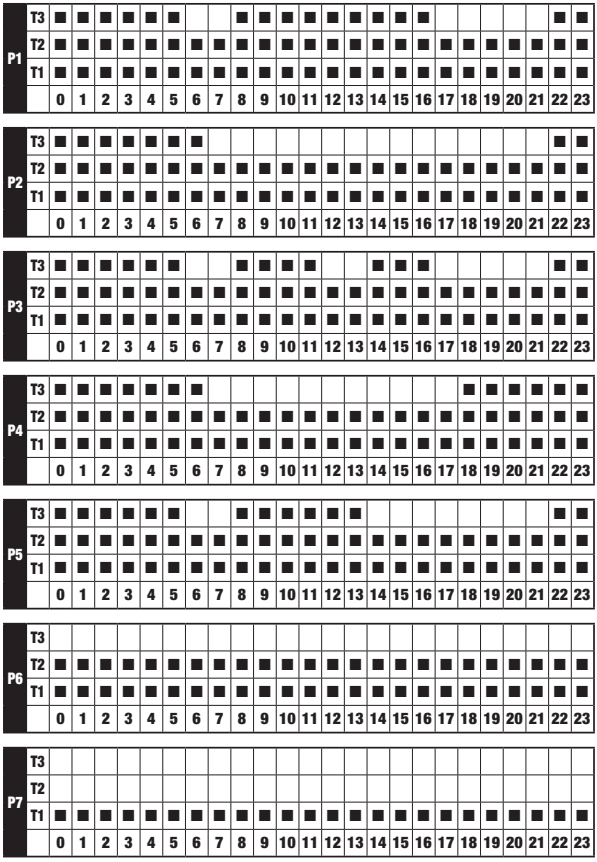
REFERENCE STANDARDS

Compliance with Community Directives 1999/5/CE (R&TTE)
2004/108/EC (Electromagnetic compatibility)
is declared with reference to the following harmonized standards:
ETSI EN 300 220-1
ETSI EN 300 220-2
ETSI EN 301 489-1
ETSI EN 301 489-3

WINTER PROGRAMS



SUMMER PROGRAMS



V3ISO0631-020

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